RBA-700H

Human-Machine Interface
With
AMD Geode LX800 SBC and
7” TFT LCD Touch Panel

USER’S MANUAL

Version 1.0

Acknowledgments

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Introduction

RBA-700H Product Features

The RBA-700H HMI controller uses a 3.5 inch Disk-Size motherboard incorporates the AMD Geode LX800 processor with speeds of 500MHz, a 7" TFT LCD display with 4 wire resistive touch panel, 2 RS232 ports, 2 RS485 ports, 1 10/100 MHz Ethernet port, 1 CF slot for OS/DATA storage.

The AMD Geode™ LX 800@0.9W processor delivers the most performance per watt in the industry today, providing x86 power and versatility to applications for entertainment, business, education, and embedded markets. Its innovative architecture and high level of integration enables small form-factor designs.

RBA-700H FEATURES:

- Supports AMD Geode LX800, 500MHz (0.9W)
- DDR SODIMM 512MB x 1, Max. 1GB memory
- Realtek RTL8100C 10/100 MHz Ethernet
- Integrated LX800 2D VGA controller
- Supports VGA CRT and TFT/LVDS LCD display
- 4 x USB 2.0 (2 internal),
- 2 x RS232, 2 x RS485
- Internal Compact Flash socket for OS/Data storage
- Watchdog timer, 1x PCI104, 1x Mini PCI (internal socket)

Checklist

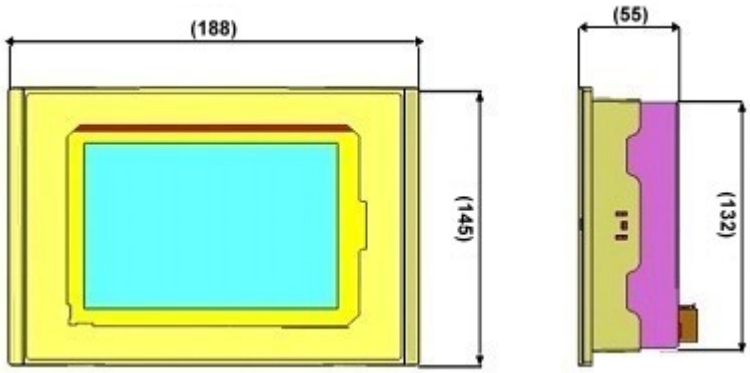
Your RBA-700H package should include the items listed below.

- The RBA-700H 7” HMI Industrial controller with 7” TFT LCD touch panel.
- This User’s Manual
- 1 Quick Installation Guide

Specifications

CPU	AMD Geode LX LX800 @ 500MHz (REC7500)
Chipset	AMD CS3356 chipset
BIOS	Award BIOS, 4Mbit
System Memory	One DDR SODIMM socket with 512MB SDRAM, supports up to 1GB SDRAM
Integrated VGA	AMD LX800 built-in 2D graphics controller Supports CRT and TFT LCD display 64MB shared memory
LAN	Realtek RTL8100C 10/100 Ethernet controller
Serial Ports	**4** Serial ports (2 RS232, 2 RS485)
USB (2.0)	**2** x USB 2.0 ports
Watchdog Timer	Generates system reset; 256 levels
Hardware Monitoring	Built in W83627HG; monitors system/CPU temperature and voltage
Compact Flash Socket	Type II
Dimensions	188mm (L) x 145mm (H) x 60mm (D)

Dimensions


(188)
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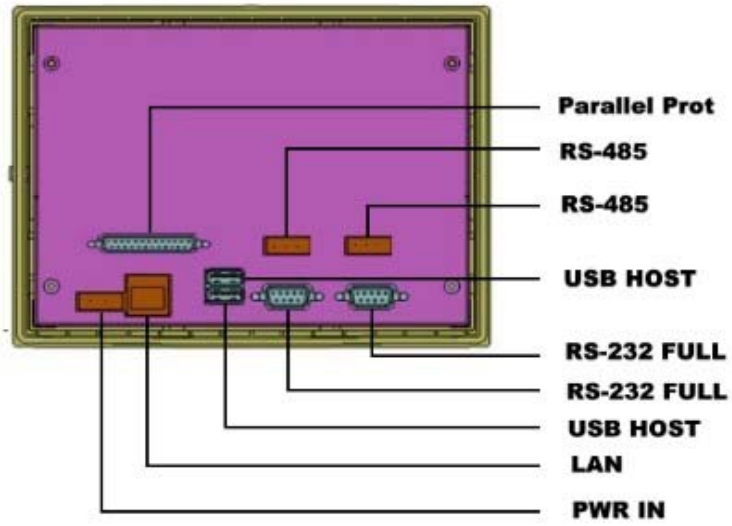

Parallel Prot
RS-485
RS-485
USB HOST
RS-232 FULL
RS-232 FULL
USB HOST
LAN
PWR IN

Installations

Warning: All setting should be done by certified personal, unauthorized opening of this unit voids the warranty.

This section provides information on how to use the jumpers and connectors on the REC-7500 in order to set up a workable system. The topics covered are:

Installing the Memory .....錯誤! 尚未定義書籤。
Setting the Jumpers .....錯誤! 尚未定義書籤。
Connectors on REC7500.....錯誤! 尚未定義書籤。
Watchdog Timer Configuration .....錯誤! 尚未定義書籤。

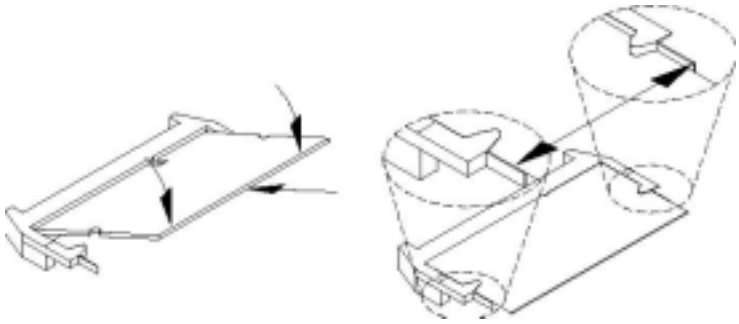
Installing the Memory

The REC7500 embedded board supports one DDR memory Small Outlines sockets for a maximum total memory of 1GB in DDR memory type. The memory module capacities supported are 128MB, 256MB, 512MB and 1GB.

Installing and Removing Memory Modules

To install the DDR modules, locate the memory slot on the embedded board and perform the following steps:

1. Hold the DDR module so that the key of the DDR module aligns with those on the memory slot.
2. Gently push the DDR module in an upright position until the clips of the slot close to hold the DDR module in place when the DDR module touches the bottom of the slot.
3. To remove the DDR module, press the clips with both hands.



Setting the Jumpers

Jumper Locations on REC7500

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JP2: Clear CMOS Contents..... 14
J14,J15 PCI104, IRQ/CLK Selection..... 14
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J9: Voltage Setting for LVDS

Jumper	Setting	Function
	Pin 1-2 Short/Closed	5V
	Pin 2-3 Short/Closed	3.3V

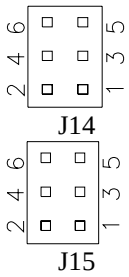
JP2: Clear CMOS Contents

Note: Disconnect the ATX-power connector from the board before clearing CMOS.

Jumper	Setting	Function
	Pin 1-2 Short/Closed	Normal
	Pin 2-3 Short/Closed	Clear CMOS

J14, J15: PCI104 IRQ/CLK Selection

REC7500 only support 2 PCI104 master in same time.
The following table describes the jumper settings for PCI104 IRQ selection.



Function	REQ0/2 GNT0/2	REQ1/3 GNT1/3
Jumper Setting (pin closed)	J14: 1-3 & 2-4 J15: 1-3 & 2-4	J14: 3-5 & 4-6 J15: 3-5 & 4-6

J12: CompactFlash Master/Slave Selection

Jumper	Setting	Function
	Short/Closed	Master
	Open	Slave

Connectors on REC7500

The connectors on REC7500 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on REC7500 and their respective functions.

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CN1: VGA CRT connector 19
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J18: AC97 Connector 20
CN8: Compact Flash Socket..... 20
PCI1: MiniPCI Socket 20
SODIMM: 200-pin DDR SODIMM Socket..... 20
LED1: Power LED 20
LED2: HDD LED..... 20
J11: LVDS Connector 20
J20: LCD Inverter Connector 20
J10: LCD (TTL) Connector..... 21
J5: IrDA Connector 21
CN10: Mini PCI Socket..... 21
CN2,CN3: USB Connector (USB1-USB4) 22
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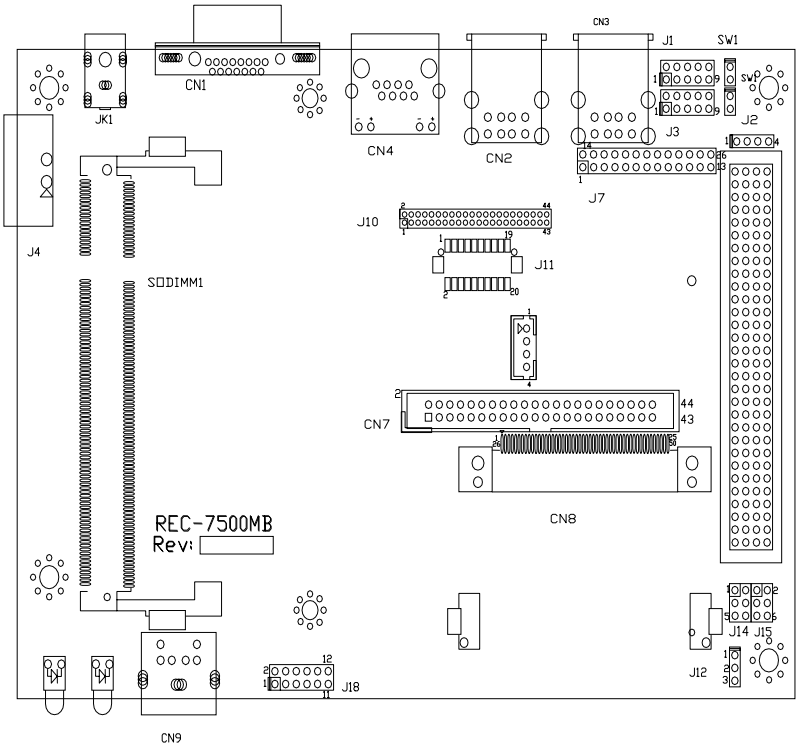
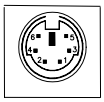
Connector Locations on REC7500



Connectors on REC7500

JK1,J4: DC Jack (DC in, 12V only)

CN9: PS/2 Keyboard,Mouse and Audio Connectors



PS/2 Keyboard/Mouse
And Audio

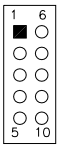
Signal Name	Keyboard	Audio	Signal Name
Keyboard data	1	1	Lineout-R
Mouse data	2	2	DGND
GND	3	3	Lineout-L
5V	4	4	DGND
Keyboard clock	5	5	MIC In
Mouse clock	6	6	DGND

Notice: The CN9 may configure to AC97 pin define, please check to your Technical support before plug-in.

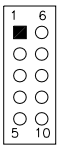
J1,J3: COM1,COM2 Serial Port

J1 (COM1) & J3 (COM3) is a 2.0mm 2x5 pin header serial port.

J1



J3



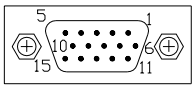
Pin #	Signal Name (RS-232)
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	Ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator
10	No Connect.

Signal Name	Pin #	Pin #	Signal Name
DCD, Data carrier detect	1	6	DSR, Data set ready
RXD, Receive data	2	7	RTS, Request to send
TXD, Transmit data	3	8	CTS, Clear to send
DTR, Data terminal ready	4	9	RI, Ring indicator
GND, ground	5	10	Not Used

J7: Parallel Port Connector

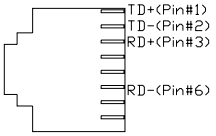
Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

CN1: VGA CRT connector



Signal Name	Pin #	Pin #	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	N.C.
HSYNC	13	14	VSYNC
NC	15		

CN4: 10/100 RJ45 Connector



J18: AC97 (Line Out, Line In, Mic) Connector

Signal Name	Pin #	Pin #	Signal Name
Line Out-L	1	2	Line Out-R
Ground	3	4	Ground
Line In-L	5	6	Line In-R
Ground	7	8	Ground
MIC Vref	9	10	MIC In
No Connect.	11	12	Ground

CN8: Compact Flash Socket

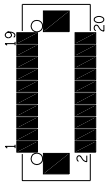
J13: PCI104 Socket

SODIMM: 200-pin DDR Small **O**utlines **DIMM Socket**

LED1: Power LED

LED2: HDD LED

J11: LVDS Connector

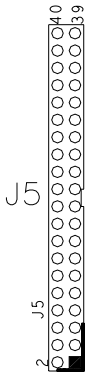


Signal Name	Pin #	Pin #	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
TX3-	10	9	TX3+
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
+12V	20	19	+12V

J20: LCD Inverter Connector

Pin #	Signal Name
1	+12V
2	Backlight Enable
3	NC
4	Ground

J10: LCD (TTL) Connector



Signal Name	Pin #	Pin #	Signal Name
12VDC	1	2	12VDC
LCD_VDD	3	4	LCD_VCC
Ground	5	6	Ground
R4	7	8	R3
R6	9	10	R5
G2	11	12	R7
G4	13	14	G3
G6	15	16	G5
B4	17	18	G7
B6	19	20	B3
TFTCLK	21	22	B5
TVCLK	23	24	B7
TV_HSYNC	25	26	TV_VSYNC
HSYNC	27	28	VSYNC
FP VDD EN	29	30	BKL EN
LDEMOD	31	32	R0
B0	33	34	R1
B1	35	36	R2
B2	37	38	G0
GND	39	40	G1

J5: IrDA Connector

Pin #	Signal Name
1	+5V
2	Ir RX
3	Ground
4	Ir TX

CN10: Mini PCI Socket

CN2,CN3: USB Connector (USB1~USB4)

Signal Name	Pin	Pin	Signal Name
Vcc	1	2	Vcc
D2-	3	4	D3-
D2+	5	6	D3+
Ground	7	8	Ground
	9	10	NC

CN7: Primary IDE Connector

Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Key
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
Vcc	41	42	Vcc
Ground	43	44	N.C.

Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sort of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:
This code and information is provided "as is" without warranty of any kind, either expressed or implied, including but not limited to the implied warranties of merchantability and/or fitness for a particular purpose.

```
;[]================================================
; Name      : Enable_And_Set_Watchdog
; IN   : AL - 1sec ~ 255sec
; OUT       : None
;[]================================================
Enable_And_Set_Watchdog       Proc  Near
            push ax                 ;save time interval
            call   Unlock_Chip

            mov  cl, 2Bh
            call   Read_Reg
            and   al, NOT 10h
            call   Write_Reg        ;set GP24 as WDTO

            mov  cl, 07h
            mov  al, 08h
            call   Write_Reg        ;switch to LD8
            mov  cl, 0F5h
            call   Read_Reg
            and   al, NOT 08h
            call   Write_Reg        ;set count mode as second

            pop   ax
            mov  cl, 0F6h
            call   Write_Reg        ;set watchdog timer

            mov  al, 01h
            mov  cl, 30h
            call   Write_Reg        ;watchdog enabled
```

```
            call   Lock_Chip
            ret
Enable_And_Set_Watchdog       Endp

;[]=============================================
; Name      : Disable_Watchdog
; IN  : None
; OUT       : None
;[]=============================================
Disable_Watchdog    Proc  Near
            call   Unlock_Chip

            mov  cl, 07h
            mov  al, 08h
            call   Write_Reg        ;switch to LD8

            xor   al, al
            mov  cl, 0F6h
            call   Write_Reg        ;clear watchdog timer

            xor   al, al
            mov  cl, 30h
            call   Write_Reg        ;watchdog disabled

            call   Lock_Chip
            ret
Disable_Watchdog    Endp
;[]=============================================
; Name      : Unlock_Chip
; IN  : None
; OUT       : None
;[]=============================================
Unlock_Chip    Proc  Near
            mov  dx, 4Eh
            mov  al, 87h
            out   dx, al
            out   dx, al
            ret
Unlock_Chip    Endp
;[]=============================================
; Name      : Lock_Chip
; IN  : None
; OUT       : None
```

```
;[]=============================================
Unlock_Chip     Proc  Near
                mov  dx, 4Eh
                mov  al, 0Aah

                out   dx, al
                ret
Unlock_Chip     Endp
;[]=============================================
; Name      : Write_Reg
; IN   : CL - register index
;          AL - Value to write
; OUT       : None
;[]=============================================
Write_RegProc  Near
                push ax
                mov  dx, 4Eh
                mov  al,cl
                out   dx,al
                pop   ax
                inc   dx
                out   dx,al
                ret
Write_RegEndp
;[]=============================================
; Name      : Read_Reg
; IN   : CL - register index
; OUT       : AL - Value to read
;[]=============================================
Read_Reg Proc  Near
                mov  al, cl
                mov  dx, 4Eh
                out   dx, al
                inc   dx
                in     al, dx
                ret
Read_Reg Endp
;[]=============================================
```

BIOS Setup

This chapter describes the different settings available in the Award BIOS that comes with the motherboard. The topics covered in this chapter are as follows:

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Set Password 43
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Exit Without Saving 43

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports various processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press  <DEL>  to  Enter  Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Phoenix - AwardBIOS CMOS Setup Utility

Standard CMOS Features Advanced BIOS Features Advanced Chipset Features Integrated Peripherals Power Management Setup PnP/PCI Configurations PC Health Status	Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Set User Password Save & Exit Setup Exit Without Saving
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item
Time, Date, Hard Disk Type…	

The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section, which displays information on the currently highlighted item in the list.

***Note**: If the system cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that resets your system to its default.*

***Warning:** It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

Standard CMOS Setup

"Standard CMOS Setup" choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Fri, Jun 30, 2006	Item Help
Time (hh:mm:ss)	00 : 00 : 00	Menu Level >
IDE Primary Master	None	Change the day, month,
IDE Primary Slave	None	Year and century
Drive A	None	
Drive B	None	
Video	EGA/VGA	
Halt On	All, But keyboard	
Base Memory	640K	
Extended Memory	514816K	
Total Memory	515584K	

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

Date

The date format is:

Day : **Sun to Sat**
Month : **1 to 12**
Date : **1 to 31**
Year : **1999 to 2099**

To set the date, highlight the "Date" field and use the PageUp/ PageDown or +/- keys to set the current time.

Time

The time format is: **Hour : 00 to 23**
Minute : 00 to 59
Second : 00 to 59

To set the time, highlight the "Time" field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

IDE Primary HDDs / IDE Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the "Master" and the second is the "Slave".

Press <Enter> to configure the hard disk. The selections include Auto, Manual, and None. Select 'Manual' to define the drive information manually. You will be asked to enter the following items.

CYLS :	Number of cylinders
HEAD :	Number of read/write heads
PRECOMP :	Write precompensation
LANDING ZONE :	Landing zone
SECTOR :	Number of sectors

The Access Mode selections are as follows:

CHS	(HD < 528MB)
LBA	(HD > 528MB and supports Logical Block Addressing)
Large	(for MS-DOS only)
Auto	

Remarks: The main board supports two serial ATA ports and are represented in this setting as IDE Channel 2 / 3 Master.

Drive A / Drive B

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

360KB	1.2MB	720KB	1.44MB	2.88MB
5.25 in.	5.25 in.	3.5 in.	3.5 in.	3.5 in.

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA adapters.

Halt On

This field determines whether or not the system will halt if an error is detected during power up.

No errors	The system boot will not be halted for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not be halted for a keyboard error; it will stop for all other errors
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all others.

Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features

Hard Disk Boot Priority	P€rss Enter	ITEM HELP
Virus Warning	Disabled	
CPU Internal Cache	Enabled	Menu Level >
First Boot Device	Hard Disk	
Second Boot Device	CDROM	
Third Boot Device	LS120	
Boot Other Device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Enabled	
Boot Up NumLock Status	On	
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
OS Select For DRAM>64MB	Non-OS2	
Full screen LOGO show	Disabled	
Small Logo (EPA) Show	Disabled	

Virus Warning

If this option is enabled, an alarm message will be displayed when trying to write on the boot sector or on the partition table on the disk, which is typical of the virus.

CPU Internal Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU.

First/Second/Third Boot Device

These fields determine the drive that the system searches first for an operating system. The options available include *Floppy*, *LS120*, *HDD-0*, *SCSI*, *CDROM*, *HDD-1*, *HDD-2*, *HDD-3*, *ZIP100*, *USB-FDD*, *LAN*, *USB-CDROM*, *USB-HDD* and *Disable*.

Boot Other Device

These fields allow the system to search for an OS from other devices other than the ones selected in the First/Second/Third Boot Device.

Swap Floppy Drive
This item allows you to determine whether or not to enable Swap Floppy Drive. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to ***Disabled.***

Boot Up Floppy Seek
This feature controls whether the BIOS checks for a floppy drive while booting up. If it cannot detect one (either due to improper configuration or its absence), it will flash an error message.

Boot Up NumLock Status
This allows you to activate the NumLock function after you power up the system.

Gate A20 Option
This field allows you to select how Gate A20 is worked. Gate A20 is a device used to address memory above 1 MB.

Typematic Rate Setting
When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to ***Disabled.***

Typematic Rate (Chars/Sec)
When the typematic rate is enabled, the system registers repeated keystrokes speeds. Settings are from 6 to 30 characters per second.

Typematic Delay (Msec)
When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to ***250msec.***

Security Option
This field allows you to limit access to the System and Setup. The default value is ***Setup***. When you select *System,* the system prompts for the User Password every time you boot up. When you select *Setup,* the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

OS Select for DRAM > 64MB

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is ***Non-OS/2***.

Full screen LOGO show

This option is

Small Logo (EPA) Show

The EPA logo appears at the right side of the monitor screen when the system is boot up.

Advanced Chipset Features

This Setup menu controls the configuration of the chipset.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

		ITEM HELP
CPU Frequency	500 MHz	Menu Level >
Memory Frequency	Auto	
CAS Latency	Auto	
Interleave Select	LOI	
XOR BA0	Disabled	
XOR BA1	Disabled	
XOR MB0	Disabled	
XOR Bit Select	Disabled	
Video Memory Size	8M	
Output Display	CRT	
VT1622 Support	Disabled	
Flat Panel Configuration	Press Enter	
Onboard Audio	Enabled	
Onboard USB 1.1	Enabled	
Onboard USB 2.0	Enabled	
Onboard USB UDC	Disabled	
Onboard USB OTG	Disabled	
Onboard IDE	Enabled	
Overcurrent Reporting	Disabled	
Port 4 Assignment	Host	
UART Port a	Disabled	
UART IR Mode	Disabled	
UARD Port B	Disabled	
Memory Hole At 15M-16M	Disabled	

CPU Frequency

This options for this field are ***Auto***, ***433MHz*** and ***500MHz***.

Memory Frequency

This default setting for this field is ***Auto***.

CAS Latency Time

You can configure CAS latency time in HCLKs as ***1.5, 2, 2.5, 3*** or ***3.5***. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

Video Memory Size

The default setting for this field is ***8M***. The options are from ***8M*** to ***254M***.

Flat Panel Configuration

This options for this field are ***Flat Panel***, ***CRT*** and ***Panel & CRT***. For flat panel, configuration settings include Flat Panel Type, Resolution (320x240 up to 1600x1200), Data Bus Type, Refresh Rate (60~100Hz), HSYNC Polarity, VSYNC Polarity, SHFCLK Active Period and LP Active Period.

Integrated Peripherals

This section sets configurations for your hard disk and other integrated peripherals. The first screen shows three main items for user to select. Once an item selected, a submenu appears. Details follow.

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

		ITEM HELP
Master Drive PIO Mode	Auto	Menu Level >
Slave Drive PIO Mode	Auto	
IDE Primary Master UDMA	Disabled	
IDE Primary Slave UDMA	Disabled	
IDE DMA transfer access	Enabled	
On board COM3 Mode	RS232	
On board COM4 Mode	RS232	
Digital Input	Enabled	
Digital Output	Enabled	
IDE HDD Block Mode	Enabled	
Onboard LAN Boot ROM	Disabled	
Onboard FDC Controller	Disabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART Mode Select	Normal	
Onboard Parallel Port	387/IRQ7	
Parallel Port Mode	SPP	
Game Port Address	Disabled	
Onboard Serial Port 3	3E8	
Serial Port 3 Use IRQ	IRQ10	
Onboard Serial Port 4	2E8	
Serial Port 4 Use IRQ	IRQ11	

IDE Primary/Secondary Master/Slave PIO

These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.

The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

IDE Primary/Secondary Master/Slave UDMA

These fields allow your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *Disabled*.

On board COM3 Mode
This feature allows users to select RS232, RS422 and RS485 Mode

On board COM4 Mode
This feature allows users to select RS232, RS422 and RS485 Mode

Digital Input
This function is always Enable.

Digital Output
This function is always Enable.

IDE HDD Block Mode
This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

Onboard LAN Boot ROM
This feature allows users to enable or disable the onboard LAN boot ROM. The default setting is *Disabled*

Onboard FDC Controller
Select *Enabled* if your system has a floppy disk controller (FDC) installed on the motherboard and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field. This option allows you to select the onboard FDD port.

Onboard Serial/Parallel Port
These fields allow you to select the onboard serial and parallel ports and their addresses. The default values for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Parallel Port	378H/IRQ7

UART Mode Select
This field determines the UART 2 mode in your computer. The default value is ***Normal***. Other options include *IrDA* and *ASKIR*.

Parallel Port Mode
This field allows you to determine parallel port mode function.

SPP	Standard Printer Port
EPP	Enhanced Parallel Port

ECP Extended Capabilities Port

2nd SuperIO Device

Onboard Serial Port 3 – 3E8h/IRQ10
Onboard Serial Port 4 – 2E8h/IRQ11

Power Management Setup

The Power Management Setup allows you to save energy of your system effectively.

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

		ITEM HELP
ACPI Function	Enabled	
ACPI Suspend Type	S1 (POS)	
Power Management	ACPI	
** PM Timers **		Menu Level >
Standby Mode	Disabled	
Suspend Mode	Disabled	
HDD Power Down	Disabled	
Modem Use IRQ	N/A	
PME Event Function	Disabled	
Soft-Off by PWR-BTTN	Instant-Off	
Power-On by Alarm	Disabled	
Time (hh:mm:ss) Alarm	0	
IRQ Wakeup Events	Press Enter	

Power Management

The options for the power management setting are ***Disabled***, ***Legacy*** and ***APM***.

Modem Use IRQ

The default setting of this field is 3.

Soft-Off by PWRBTN

This field defines the power-off mode when using an ATX power supply. The *Instant Off* mode allows powering off immediately upon pressing the power button. In the *Delay 4 Sec* mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than 4 seconds.

PM Timers and IRQ Wakeup Events

The HDD, FDD, COM, LPT Ports, and PCI PIRQ are I/O events that can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

PNP/PCI Configurations

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

		ITEM HELP
PNP OS Installed	No	Menu Level
Init Display First	PCI Slot	
Reset Configuration Data	Disabled	Default is Disabled. Select Enabled to reset Extended System Configuration Data ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.
Resources Controlled By	Auto (ESCD)	
IRQ Resources	Press Enter	
Memory Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	

PNP OS Installed

If your OS supports Plug & Play (PnP), select **Yes** so that it can take over the management of device resources. If you are using a non-PnP-aware OS or not all of the operating systems you are using support PnP, select **No** to let the BIOS handle it instead.

Init Display First

This field refers to the primary video or primary video adapter. The default setting is ***PCI Slot***.

Reset Configuration Data

This field allows you to determine whether to reset the configuration data or not. The default value is ***Disabled.***

Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices automatically with the use of a use a PnP OS system such as Windows 95.

PCI/VGA Palette Snoop

Some non-standard VGA display cards may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA cards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with an MPEG ISA/VESA card.

PC Health Status

This section shows the parameters in determining the PC Health Status. These parameters include temperatures, fan speeds and voltages.

Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status

		ITEM HELP
CPU Warning Temperature	Disabled	Menu Level >
Current System Temp.	45°C/113°F	
Current CPU Temp	30°C/86°F	
Current System FAN Speed	0 RPM	Menu Level >
Current CPU FAN Speed	0 RPM	
Vcore(V)	1.18 V	
Vtt	2.57V	
Vcc3(V)	3.39V	
+5V	5.13 V	
+12V	11.12 V	
-12V	-12.19 V	
VBAT(V)	3.21 V	
5VSB(V)	5.04	

CPU Warning Temperature

This field allows the user to set the temperature so that when the temperature is reached, the system sounds a warning. This function can help prevent damage to the system that is caused by overheating.

Temperatures/Voltages

These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.

Load Fail-Safe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

Set Supervisor/User Password

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Save & Exit Setup

This option allows you to determine whether or not to accept the modifications. If you type “Y”, you will quit the setup utility and save all changes into the CMOS memory. If you type “N”, you will return to Setup utility.

Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.

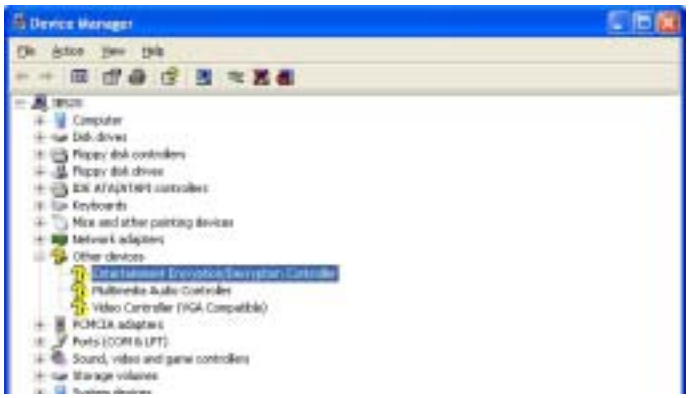
Drivers Installation

This section describes the installation procedures for software and drivers under the Windows 2000 and Windows XP. The software and drivers are included with the motherboard. If you find the items missing, please contact the vendor where you made the purchase. The contents of this section include the following:

Entertainment Encryption/Decryption Controller Driver..... 45
VGA Drivers Installation 47
Audio Driver Installation 50

Entertainment Encryption/Decryption Controller Driver

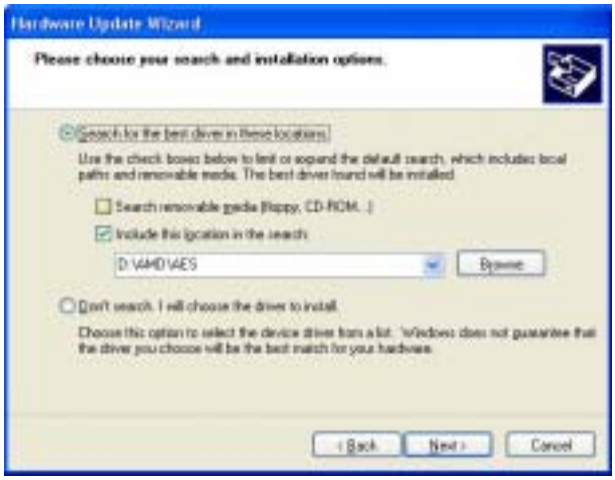
1. In the Windows operating system, go to the Device Manager.
2. As shown below, click the **Entertainment Encryption/Decryption Controller** under **Other devices**.



3. In the following window, click the **Driver** tab and click **OK** to continue.

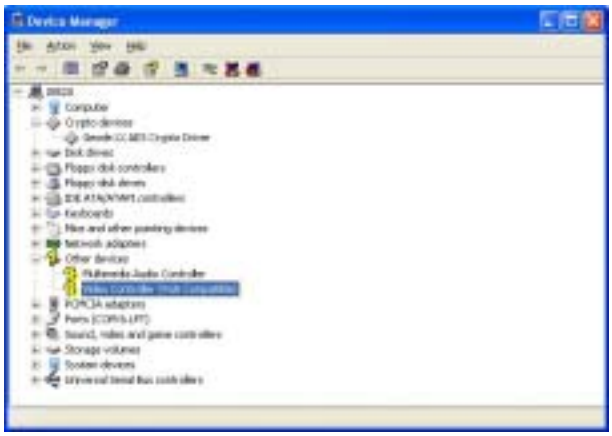
4. In the Hardware Update Wizard, select **No, not this time** and click **Next** to continue. Then select **Install from a list of specific location (Advanced)**. Click **Browse** to find the driver's path in the CD provided - **\AMD\AES**. Then, click **Next** to start the drivers installtion. Then click **Finish** after the wizard has finished installing the software for ***Geode LX AES Crypto Driver***.

Hardware Update Wizard
Welcome to the Hardware Update Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel


Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
D:\AMD\AES
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

VGA Drivers Installation

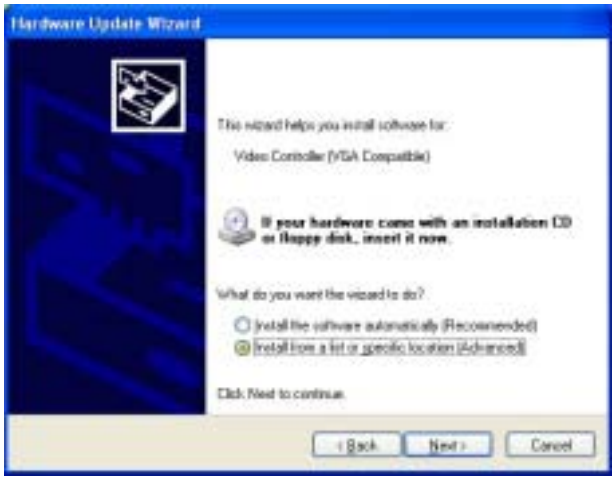
1. In the Windows operating system, go to the Device Manager.
2. As shown below, click the **Video Controller (VGA Compatible** under **Other devices**.



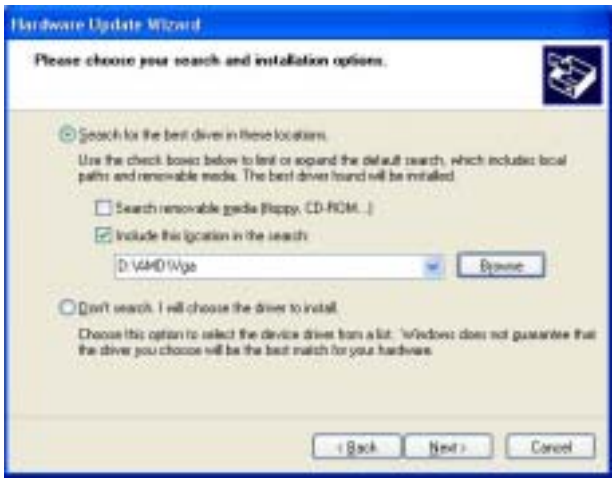
3. In the following window, click the **Driver** tab and click **OK** to continue.

4. In the Hardware Update Wizard, select **No, not this time** and click **Next** to continue. Then select **Install from a list of specific location (Advanced)**.

Hardware Update Wizard
Welcome to the Hardware Update Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel


Hardware Update Wizard
This wizard helps you install software for:
Video Controller (VGA Compatible)
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

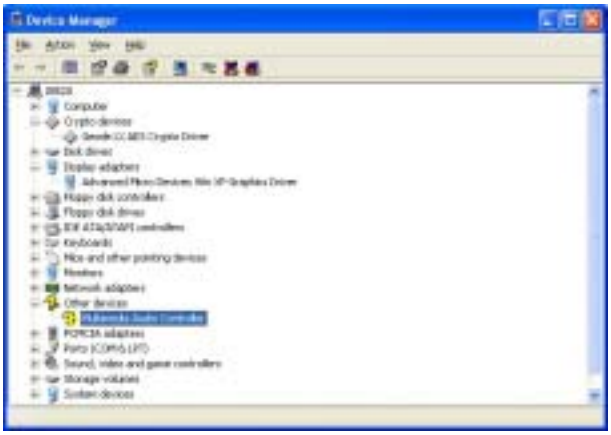
5. In the next screen, click **Search for the best driver in these** locations. Check **Include this location in the** search. Click **Browse** to find the driver's path in the CD provided or enter the path directly - **\AMD\Vga**. Then, click **Next** to start the drivers installtion. Then click **Finish** after the wizard has finished installing the software for ***Advanced Micro Devices Win XP Graphics Driver***.


Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
D:\AMD\Vga
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

Hardware Update Wizard
Completing the Hardware Update Wizard
The wizard has finished installing the software for:
Advanced Micro Devices Win XP Graphics Driver
Click Finish to close the wizard.
< Back
Finish
Cancel

Audio Driver Installation

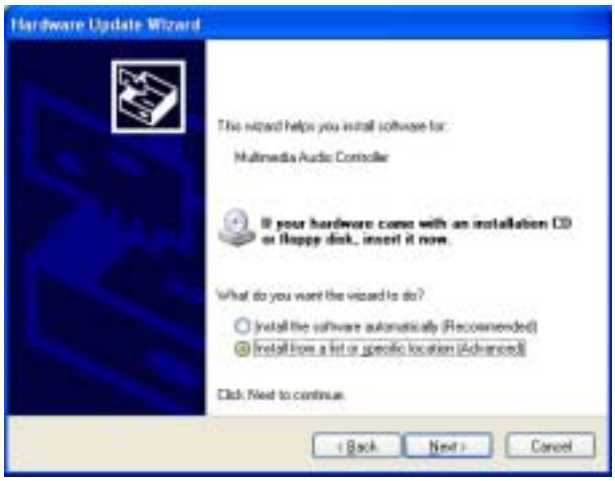
1. In the Windows operating system, go to the Device Manager.
2. As shown below, click the **Multimedia Audio Controller** under **Other devices**.



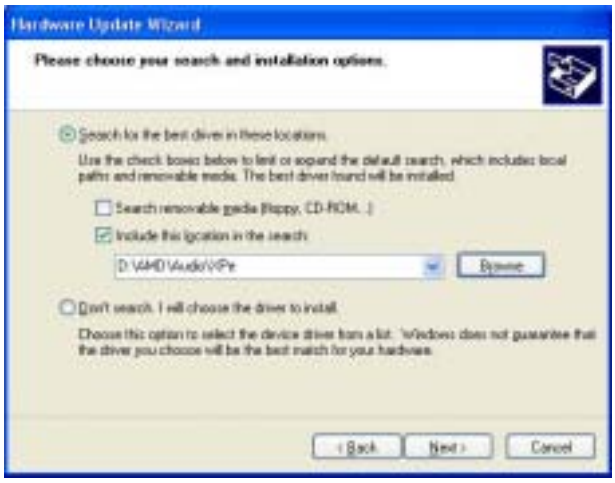
3. In the following window, click the **Driver** tab and click **OK** to continue.

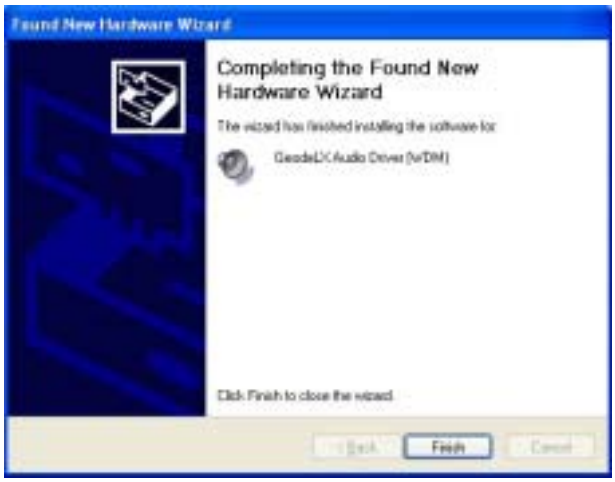
4. In the Hardware Update Wizard, select **No, not this time** and click **Next** to continue. Then select **Install from a list of specific location (Advanced)**.

Hardware Update Wizard
Welcome to the Hardware Update Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel


Hardware Update Wizard
This wizard helps you install software for:
Multimedia Audio Controller
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

5. In the next screen, click **Search for the best driver in these** locations. Check **Include this location in the** search. Click **Browse** to find the driver's path in the CD provided or enter the path directly - **\AMD\Audio\XPe**. Then, click **Next** to start the drivers installtion. Then click **Finish** after the wizard has finished installing the software for ***GeodeLX Audio Driver (WDM)***.


Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
D:\AMD\Audio\XPe
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel


Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
GeodeLX Audio Driver (WDM)
Click Finish to close the wizard.
< Back
Finish
Cancel

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Appendix

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses that also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE